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very numerous and very abundant in species, and seem to exemplify the views of Prof. Cope in a remarkable manner. Take, for instance, the Orthis family, one of the most common and prolific both in respect to individuals and species. In this family are five or six well-marked genera, and yet the specific characters, so far as they are discernible in the hard parts, are often quite identical in species of different genera; and though they have often varied, yet sufficient constancy is maintained to deceive any careless investigator, and to give the idea of specific identity. It is fairly to be inferred from a study of this class of fossils that generic and perhaps higher characters may change very rapidly, while specific ones are changing but slowly, nor remaining constant.

MAY 16.

Dr. CARSON, Vice-President, in the chair.

Twenty-three members present.

Remains of Mastodon and Horse in North Carolina.—PROF. LEIDY exhibited two photographs, received from Prof. W. C. Kerr, State Geologist of North Carolina, representing some remains of *Mastodon americanus* found in that State. One of the specimens represented is that of the greater part of the lower jaw of a mature male, retaining both incisor tusks and the last two molar teeth. The latter, with their angular lobes separated by deep angular and nearly unobstructed valleys, are quite characteristic of the species. The incisors are an inch and three-fourths in diameter. The last molar has four transverse pairs of lobes and a well-developed heel. The penultimate molar has three transverse pairs of lobes. The specimen was obtained from gravel overlying the miocene marl near Goldsboro', Lenoir Co., N. C. An isolated last lower molar of the same species, represented in company with the jaw, was obtained in Pitt Co.

PROF. LEIDY also exhibited a specimen of an upper molar tooth, which Mr. Timothy Conrad had picked up from a pile of miocene marl at Greenville, Pitt Co., N. C. He suspected, from its size and intricacy in the folding of the enamel of the islets at the middle of the triturating surface, that the tooth belonged to the post-pliocene *Equus complicatus*, and was an accidental occupant of the miocene marl. It may, however, belong to a Hipparion of the miocene period, but the imperfection of the specimen at its inner part prevented its positive generic determination.

Remains of Extinct Mammals from Wyoming.—PROF. LEIDY then directed attention to what he regarded as one of the most remarkable fossils which had yet been discovered in our western territories. The specimen consists of the greater portion of the lower jaw of a pachyderm from the Bridger tertiary formation, probably eocene, of Wyoming. It was discovered by Dr. J. Van A. Carter, of Fort Bridger, in the vicinity of that place. In the same locality were also found remains of *Palæosyops paludosus*, and the curious turtle *Anosteira ornata.*

The jaw belonged to an old individual, as indicated by the worn condition of the molar teeth; and the animal to which it pertained was about the size of the larger Peccary. The jaw, however, is of much more robust character than in the latter. The two rami are completely coössified at the symphysis, as in recent pachyderms. The chin, or forepart of the jaw, resembles in its broad slope the corresponding part in the Rhinoceros or Peccary, but is convergent as in the Beaver or other rodent.

The forepart of the jaw is occupied by two large teeth, the features of which are such that at first glance one would think we had before us a portion of the skeleton of some huge representative of the order of Rodentia. The two teeth curve upward and forward in the same manner as in the latter, but are separated by a decided interval, which at the edge exhibits alveoli for a pair of small incisors. Hence the number of incisors appears to be four, and the large teeth are to be regarded as the lateral pair. These do not extend backward in their alveoli further than the position of the premolars, and in this respect differ widely from the condition of the Beaver and other rodents.

The form and construction of the incisors are wonderfully like in the latter animals. As in these, their forepart alone is invested with enamel, which is quite thick. They are, however, decidedly convex in front, and not nearly flat, as usual in rodents. They have been worn off in a sloping manner, not only as in these, but also laterally, so that it would appear the corresponding upper teeth were more divergent than the lower ones, or held a position related with one another resembling the condition in the peccaries and hogs, rather than in the rodents.

Unless the large teeth described are to be regarded as canines, instead of incisors, they were absent, as in the Rhinoceros and Mastodon.

The fossil exhibits evidences of the existence of six molar teeth, and there may have been a seventh in the series, but this is not obvious in the specimen. The molars extended close to the position of the large incisors, leaving no hiatus like that in Rhinoceros, Mastodon, and the rodents, or like that in the Peccaries back of the canines.

Nearly all the molars have been lost in the fossil, the imperfect crown of the second true molar and part of that of the first alone being preserved. The base of the crown of the last of the series indicates a fore and aft three-lobed tooth, as in *Palæosyops*, *Titanotherium*, and *Palæotherium.*

The crown of the second molar is much worn, but in the entire condition appears to have had nearly the same construction as in the genera just named. It was indeed suspected from the form of this tooth that the jaw belonged to *Palæosyops*, but to a smaller species than *P. paludosus*, the forepart of the jaws of which have not been discovered. The bottom of the symphysis of the jaw under examination reaches as far back as the position of the first true molar, but in a fragment of *Palæosyops paludosus* is seen not to extend as far as the last premolar. Other differences in the corresponding portions of the jaw indicate the animals to belong to different genera.

For the curious pachyderm, first brought to our notice by Dr. Carter, the name of TROGOSUS CASTORIDENS, or the Beaver-toothed Gnawing-hog, was proposed.

The fossil brings to our view an animal which would appear to have pertained to the stock from which diverged the Rhinoceros and Mastodon, the Peccary, and perhaps the Beaver.

Measurements of the fossil are as follows: Length of jaw from back of last molar to fore edge of symphysis, 4 inches 10 lines; depth of jaw below true molars, 1 inch 8 lines; depth of symphysis, 2 inches 8 lines; thickness of jaw above base, 10 lines; length of molar series from position of large incisors, 4 inches; length of true molar series, 2 inches 7 lines; space between large lateral incisors, 4 lines; fore and aft diameter of large incisors, 9½ lines; transverse diameter of the same, 6 lines.

Another interesting fossil, discovered by Dr. J. Van A. Carter in the same locality as the former, is the portion of the ramus of a jaw of a carnivorous animal about the size of the Gray Fox. The specimen contains two teeth, apparently the last premolar and the sectorial molar, behind which are portions of two other teeth.

The last premolar is larger than in the Gray Fox, and is larger than the succeeding tooth, being both wider and higher. The principal cusp exhibits a feeble denticle in comparison with that on the back border in the Gray Fox. The heel of the crown is proportionately better developed than in the latter, and presents a fore and aft acute edge, from which the sides slope to the basal ridge.

The carnassial tooth is less in size than the tooth in advance. The crown has the same general form as in the corresponding tooth of the Foxes and Weasels. The forepart or sectorial portion of the crown is less well developed than in the Fox, and the inner cusp is half as large as the principal one. The notch of the sectorial border does not end in a cleft, as in the Fox. The heel or back portion of the crown is nearly half the breadth of the latter, and it includes a concavity bordered by a horseshoe-like ridge, as in the Weasels.

The next tooth is rather larger than the one described, and is inserted by two fangs. The forepart of the crown is broken away; the back part has the same form as in the tooth in advance. This may also have been a carnassial tooth.

The last tooth, the smallest of those in the jaw specimen, was also inserted by a pair of fangs. Its crown is broken away.

The animal indicated by the jaw fragment appears to have held a position intermediate to the musteline and canine families. It was proposed to name it SINOPA RAPAX, the former name, according to Prof. Hayden, being that applied by the Blackfeet Indians to a small Fox.

MR. THOMAS MEEHAN exhibited a specimen of Achillea millefolium, in which an underground stolon of an Agrostis had penetrated, and referred to a similar case, to which he had called the attention of members last year, where a Triticum had penetrated through large tubers of potatoes. He remarked at that time on the peculiarity of the growing force of plants which would rather endeavor to push directly through an obstruction, than turn to one side out of its straight course. He thought the present instance still more remarkable, as the living stem of Achillea was little thicker than ordinary brown thread, yet the grass had cloven it directly in halves in a manner we could scarcely imitate with a needle.

He then presented a quantity of sprouting peach-kernels, in order to call attention to the great variety of form which existed in the cotyledons. The most usual was ovate, the apex and base both regularly tapering, but some were obtuse—occasionally almost square—at the apex; while others were so lengthened out at the base as to give to the cotyledon a spathulate form. Others were cordate at the base, some more with the base of the lobes spurred, and others again which were simply gibbous on one side. We were, he said, all familiar enough with the fact of great natural variations in foliar and floral organs, but he believed no great differences in cotyledons have been exhibited here.

But he thought there prevailed a still greater interest in the lobing of the separate cotyledons. It was very common to find some which had one of the cotyledons separated for one-third the depth, some one-half, and occasionally two-thirds, and in some cases both cotyledons would be divided, so as to present the appearance of four perfect ones—that is, the two would be divided almost down to what might be termed their petioles. Still more interesting he thought the fact that, in one of the cases he exhibited, another plumula had been formed in the angle of the divided cotyledons. It had been his opinion that in many plants cotyledons were to be considered as modified axis, rather than modified leaf, speaking according to the general idea of stem-structure, for he inclined to the opinion that all axis originally is but modified leaf—and in these cases it would seem as if the cotyledons had started to make another mode of growth, as a true stem axis would do.

In regard to the number of cotyledons, he thought a close examination might find it variable in many classes of plants. Mr. Burk, of the Academy, had called his attention to the fact that it was by no means uncommon for the common morning-glory (*Convolvulus purpureus*, L.) to have three cotyledons. In Coniferæ the numerical variations were well known.

Amongst the peach cotyledons was one in which the radicle, with numerous branching fibres, had pushed several inches beneath the integuments, and coiled themselves about the cotyledons. The interest here was, that this had evidently taken place, before the seed had quite finished its growth in the fall, as there were grooves all along the surface of the cotyledons which indicated that they had rather grown around the fibres, than that the latter had forced their way through after the cotyledonous growth had been completed.

Mr. Meehan further exhibited two stalks of a *Lilium candidum*, the common white lily, grown in a greenhouse by Mr. W. C. Strong, of Brighton, Mass., which, instead of the usual flowers, had each terminated in two large scaly bulbs, one inch, and one and a half inches in diameter, precisely similar to those produced under ground. In the ordinary growth of this lily, the spring leaves, which started from the scales, were broadly ovate, not long and narrow as the stem leaves were, and in these terminal stem-bulbs the broad leaves terminated the scales in the same way, giving the flower-stems a peculiar coronetted appearance. He explained a difference in the bulblets we often find in some lilies, and true bulbs, in this, that bulblets form in the axils of the leaves; and while the scales of the true bulb were simply dilated and succulent leaf-stalks. They had no axillary buds visible. These axillary buds were, however, really formed, but were absorbed by the leaf structure, as he had shown in past times was the case in *Cassia marilandica*, when accounting for the gland on the petiole of that plant In the case of the lily, however, the bud, though absorbed, did not wholly lose the power of development, for though, if suffered to remain on the parent stem, scales, absorbed buds and all, usually died away, yet if these scales were removed so that the matter stored in them was not absorbed by the growing flower-stem, the latent bud in the scale would develop itself into a bulblet, which the next year would become a bulb of the ordinary character. It was in this way that the lily was now so extensively propagated by commercial florists.

MAY 23.

The President, Dr. RUSCHENBERGER, in the chair.

Twenty-eight members present.

The following papers were presented for publication:—

"On the fishes of the Ambyiacu River." By Edw. D. Cope.

"Descriptions of new species of fossils from Ohio and other western States and Territories." By F. B. Meek.

"Contributions to Orthopterology." By Prof. C. Thomas.